

FREUDENTHAL (W.)

Poisoning by Creosote.

With the Author's Compliments

BY

W. FREUDENTHAL, M.D.,

NEW YORK.



Reprinted from the MEDICAL RECORD, April 23, 1892.

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POISONING BY CREOSOTE.*

THE use of creosote internally has become so common since Sommerbrodt's † publication of a series of five thousand cases of tuberculosis, in which this drug was administered, that it seems rather remarkable that no case of poisoning by it has thus far been reported.

Before speaking of a particular case of creosote poisoning, which occurred under my observation, I pronounce the day passed when two or three drops of creosote were considered as possessing any therapeutic value. The ancient custom of administering such small doses is only adhered to by very few at present. Nearly all physicians agree that creosote, in order to be effective in the treatment of disease, should be given in much larger doses than in former times.

Bouchard ‡ was the first who gave creosote on a larger scale. His formula was used by Sommerbrodt and then abandoned, being substituted by capsules containing creosote 0.5 and balsam of tolu 0.02 gramme. The "toxic" effect of larger doses was, even at that time, so feared, that Sommerbrodt, in his first publication on this subject, stated emphatically that he gave as large a dose as 0.5 gramme daily.

Numerous articles by various writers followed this publication of Sommerbrodt, and most of the authors agree as to the potency and the beneficial effect of this drug. Among these may be mentioned Fräntzel, § who, however is opposed to large doses; furthermore, Peter Kaatzer, || von Brun, ¶ Sedziak, of Warsaw, **

* Read before the German Medical Society, March 7, 1892.

† Sommerbrodt: Berl. klin. Wochenschrift, 1887, p. 258.

‡ Bouchard: Bulletin gen. de Ther., 1887.

§ Fraentzel: Deutsche Med. Wochenschrift, 1887.

|| Kaatzer: Berl. klin. Wochenschrift, 1888.

¶ V. Brun: ibidem., 1888.

** Sedziak: Gaz. lekarska, 1888.

Kossow-Geronay,* S. Engel,† E. Holm, ‡ Schetelig, § and especially Driver, || of Reiboldsgrün. J. Rosenthal recommends the administration of creosote to tuberculous patients in carbonic acid water. Strümpel ¶ is one of the few who has not had good results from it. Hopman,** however, had given creosote in a few thousand cases of laryngeal and pulmonary tuberculosis with very good effects. He favors large doses, and gives it in the well-known formula with compound tincture of gentian. This formula was adopted by me, as well as by others, and I used it continuously up to the end of last year. I gave it in wine, whiskey, brandy, milk or water, and at times in cod-liver oil. Generally I began with two drops of this solution (1 creosote, 2 tincture of gentian), t.i.d., and increased it each day, or every second day, one drop. It is my habit to increase the dose as long as the patient's stomach will accept it without evincing any disturbance. As I have the strong conviction that the more the patient can take the better it is for him, I prescribed 30, 50, 80 and 100 drops of this solution, t.i.d., and the majority of the patients stood it most excellently.

What enormous doses some patients can take by gradual increase, while a sudden overdose will cause intoxication, will be seen by the case which I am about to relate.

Mrs. H. H——, aged thirty, a native of Hungary, consulted me, upon the advice of her family physician, on February 24, 1891, on account of throat trouble. She had been married ten years, and had had nine children, four of which are living. Her

* Kossow-Geronay: Wiener klin. Wochenschrift, No. 461, 1888.

† Engel: Therapeut. Monatshefte, No. 11, 1889.

‡ E. Holm: ibidem, 1889.

§ Schetelig: Deutsche Med. Ztg., 1889.

|| Driver: Berl. klin. Wochenschrift, 1888.

¶ Strümpel: Muenchener Med. Wochenschrift, 1888.

** Hopman: Berl. klin. Wochenschrift, 1887.

father died in his seventieth year, of "heart failure ;" her mother is still alive. A year before she consulted me she had caught a cold, and in the following July a cough developed, with pains in the chest. Three to four weeks previous to this first consultation she felt an irritation in the throat, which increased to actual pain two weeks later, especially while swallowing. Whenever she retired it "cooked in her throat like boiling oil."

After the acute pharyngitis and laryngitis from which she was suffering had disappeared under a mild treatment, I found the following conditions : The mucous membranes of the pharynx and larynx were extremely anæmic, there were superficial ulcerations on the uvula, and deeper ones on the epiglottis and the vocal chords. The posterior wall of the larynx was infiltrated. Physical examination of the chest revealed dulness on both sides down to the second rib, bronchial breathing, and numerous coarse and fine râles all over both lungs. She had had some hemorrhages, the pulse was rapid and extremely weak, she coughed almost constantly, had no appetite, slept poorly, and her strength was so impaired that I agreed with the family physician, who had made a very dismal prognosis. In fact, she impressed me almost as moribund.

This was at the time when the tuberculin question had reached its zenith, so I proposed the injection of Koch's lymph, but the hospitals were all so overcrowded that she could not find admittance to any. As I, however, had to administer some treatment, I gave, *faute de mieux*, creosote in the following way :

Rp. Creosote.....	10.0
Tinct. gent. co.....	20.0
M. S.: T.i.d., two drops in water ; each day one drop more.	

I told Mrs. H—— that the larger the dose she could

take the sooner she would feel relieved. Upon inquiring whether she might expect any relief at all from the drops, I told her that it was my belief that if anything could help her this would, for such was my conviction, and in consequence the patient continued increasing the number of drops without asking further advice concerning the creosote prescription.

The following extracts are taken from my book of record :

April 15, 1891.—Mrs. H——, already takes sixty drops of the above solution. t.i.d., *i. e.*, sixty drops of pure creosote per day without any difficulty. She feels somewhat better, it “cooks still in the throat,” but not as badly as before. She sleeps better, her cough disturbing her but two or three times during the night. Here I will remark that among other instructions I bade her take as much out-of-door exercise as possible, but with the usual precautions.

April 22d.—It still “cooks in her throat” at night time, but she feels considerably better, and takes seventy drops t.i.d. The ulcerations on the uvula are healed, also those on the epiglottis, but new ones have appeared on the latter.

July 5th.—The patient had now reached one hundred drops t.i.d. But her child fell sick, and confined her to the house. Even as small a quantity as ten drops at this time made her dizzy, as though she had taken strong wine, and so she was compelled to give them up entirely as long as she was forced to stay indoors.

August 12th.—The patient was at Long Branch, where she was continuously in the fresh air, and took again the hundred drops t.i.d. without the slightest effect. The pains in the throat have almost entirely disappeared.

December 6th.—On the right side of the chest no more dulness. Right behind, at the height of the spina scapulæ, râles ; left front and behind, few râles. The

patient has reached two hundred drops, only taking them twice daily, as she is prevented from going out more often. She improved remarkably during the summer, and looks and feels better than heretofore. Increasing steadily from this period, she reached three hundred drops twice daily by January, 1892.

On January 26th, in my office, I measured three hundred drops, gave them to her, and she left at once to take her customary walk.

On January 29th, 11 A. M., she took the usual three hundred drops and went walking, but not feeling well returned shortly and drank a glass of wine. Still feeling weak, she thought of the drops, which at all times had helped her greatly, and thereupon took another dose of three hundred drops for quicker relief. The results were of the most exciting nature. She had hardly strength enough to drag herself to her bed, where she lay unconscious for eight to nine hours. When I saw her, late in the evening, she looked like one in narcosis. Her eyes were closed and she was puffing and blowing incessantly, her breathing being stertorous. There were loud, coarse râles, which could be heard from a distance, over the whole chest. She was in a state of intense trismus (lockjaw). The teeth were so tightly clenched that it was impossible to separate the jaws. Her lips were cyanotic, and the pupils were contracted and did not react. There was a general loss of sensibility and paralysis of all reflex movements. Her pulse was 128, and the respiration about 30. She urinated in bed, but the bedclothes were not blackened. The urine was of a light color. After watching the patient a while I saw signs of gradual recovery. Holding ammonia under her nose, she slightly moved her head. A mustard foot-bath was given and ice applications were made to the head, then she awoke and felt no disagreeable results. Nor did she feel any evil consequence of this intoxication dur-

ing future treatment. Through a misunderstanding I received no urine of that night and the following day, and it was not until two days later that the urine was sent me, of which I shall speak later.

On reviewing this history we find two important facts of greatest interest: First, the enormous quantity of creosote this patient was able to take; and secondly, the intoxicating effect after suddenly taking the double quantity of the drug. I have been told that creosote was in former days more expensive than at present; this may have been the reason for its frequent adulteration. Impure carbolic acid was most often substituted for creosote, and therefore the symptoms of creosote poisoning were almost identical with those of carbolic acid poisoning. As creosote became cheaper adulteration was no longer profitable, and to the welfare of our patients we are enabled to prescribe larger doses, taking it for granted that we can always obtain the pure beech-wood creosote.

The action of creosote is often similar to that of alcohol. It is a substance which mankind can slowly become habituated to, just as arsenic, morphine, alcohol, etc., and the accumulation thereof in the body has—as in all my experience—not been followed by any bad results. When first I prescribed large doses I feared it might affect the kidneys, but repeated examinations in the case of Mrs. H—— reassured me that these parts were perfectly normal. Many other cases showed the same negative results.

Since the year 1887, after treating a few hundred cases of pulmonary consumption in private and dispensary practice, all of whom were suffering at the same time from laryngeal phthisis, I positively affirm that creosote, administered to those who can bear it, becomes more effective the larger the quantity taken.

Having stated the number of drops taken by Mrs. H——, the vital question follows, What was their ac-

tual weight? To answer this exactly, I asked the patient for the dropper she had been using, and then Mr. Thomas Latham was kind enough to measure the creosote, which had been bought at his drug store. The following was the startling result: 15 minims equals 45 drops of patient's pipette; 1 minim equals one-third minim creosote; specific gravity of creosote about equals 1.08, average equals one-tenth heavier than water; 300 minims equals 20 c.c. By weight of creosote, about 18.00 grammes; 300 drops from patient's pipette equals 7.34 grammes; creosote equals one-third of mixture, equals 2.40 grammes! which shows that the patient had taken in the last two months 2.4 grammes of pure creosote at a dose; but it is more probable that the dose was 5 grammes daily. The amount impressed me as being very small, although by contrast to former usage it appears large. By Mr. Latham's assistance I soon obtained another pipette, which was so large that by measuring the same number of drops we found exactly double the quantity of creosote. Had she used this last pipette she would have taken nine or ten grammes creosote a day.

Although a common fact that there is no standard size of pipettes in our pharmacopœia, it is so often forgotten that I hold it necessary to draw attention to the above illustration, which taught me to cease prescribing creosote in drops. If we desire uniformity in our experiments and in our results, and if we wish to feel certain of the exact quantity of creosote the patient is taking, we must not prescribe in the form of drops. After a fair trial of different forms of prescription, as in pills, capsules, oil, etc., I finally came to the conclusion that the following is the best method: Give the creosote in pill mass, with liquorice, inclosed in capsules. This double casing prevents evaporation, which often happens when packed alone as pill or capsule. The advantage of no smell nor taste, but principally of

the exact measurement, which cannot be obtained with the unreliable pipette, is of paramount value. The above formula is quoted from an old prescription, the author being unknown to me.

When this form is used we can gradually increase the quantity without any fear of intoxication until the patient's stomach revolts. How groundless, however, the fear of creosote poisoning is shown by the fact that I could find no clinical report, but the two cases of Taylor and Manouvriez, and in both of these creosote was not prescribed as a medicine by a physician. Taylor* reports the following case: "The oil of tartar is a powerful vegetable irritant. In 1832 about ten drachms of it caused the death of a gentleman to whom it had been sent by mistake for a black draught. The druggist who sent it was tried for manslaughter, but acquitted. Its irritant properties are owing to creosote, carbolic acid and other compounds." I believe that in Taylor's report either he made a mistake or there is an error in the print, as the oil of tartar is a strong solution of carbonate of potassium and sal tartar, being entirely colorless and not black. But it might have been the oil of tar, which has these qualities. At all events, this case is not clear.

Neither does the case of Anatole Manouvriez† throw much light upon this subject. The case treats of a bottle-fed baby, eleven days old, who was given creosote by the mouth. Some minutes later it was found almost suffocated, with a strong odor of creosote, pale and the mouth half open. The child writhed and made strong efforts to breathe and to cough. From time to time it gave forth hoarse cries, as though suffering from membranous croup. Fluids could not be swallowed, but came back through the nose. The child died after eleven hours, during which time it was able to swallow but once.

* A. S. Taylor: *On Poisons*, etc. Philadelphia, 1885.

† A. Manouvriez: *Ann. d'Hyg.*, 1882.

Not knowing the amount of creosote given in either of these cases, we can draw no exact conclusions of the effect of the creosote. That the child could not swallow or breathe is very natural, from the deep cauterizing caused by the creosote in the pharynx and larynx (this was shown at the autopsy). Probably this is the same reason why the child kept its mouth open, whereas Mrs. H——'s jaws were tightly closed.

The writhing of the child is a proof of severe pains in the abdomen. Such colicky pains were never present in my patient, except in the last few months, when she took the large doses, she had pains in the lower abdomen, but only during the period of menstruation. Therefore I advised her to omit the drops while unwell. Even at the time when she took the six hundred drops at once she complained of no pains in the abdomen, and I am surprised that Brunton, in his "Pharmacology" (page 69), makes the following remarks: "Large doses (*i. e.*, of creosote) taken internally cause nausea, vomiting, colicky pains and diarrhœa." These statements appear incorrect in more than one respect. If large doses would cause, as the author says, vomiting, then the greater part or all of the creosote would be expelled from the stomach, and it is not easily understood how such a patient could have diarrhœa or colicky pains, although the latter might be the result of some other cause. Here I should like to mention that in most of the text books the authors call a great deal of attention to vomiting after large doses of creosote without any foundation for the statement.* My patient never had diarrhœa.

A point of great practical importance is the urine. When I first gave the large doses I was afraid that the patient might develop nephritis, but she never complained about pains in that region, nor did the urine, which was examined by me about every four weeks,

*L. Levin's Text Book on Toxicology, and others.

contain albumen or casts. L. Weber, who administered but small doses, never found a nephritis either. But M. Manges personally informed me that in treating a man, twenty-five years of age, beginning with the dose of ten drops of Hopmann's solution t.i.d., increasing every second day two drops, he found when 150 drops were reached (*i. e.*, 50 drops of creosote) that pains began in the loins, and nephritis had set in (albumen casts, no blood). This nephritis disappeared three days after the medicine was discontinued. The urine Dr. Manges affirms, was never darkened. This is the only case of nephritis which I know of following the use of creosote.

As I have already stated, through neglect I did not receive the urine until two days after the poisoning. I sent this specimen to my friend, Dr. Hugo Schweitzer,* who informed that the urine examined did not contain any creosote, nor its products of transformation.

But of this I am positive, that the urine never was black, nor even darker than usual. Also in this respect there is no similarity to carbolic acid. Even to present date the urine has never been darkened. But as to whether the urine smelled of creosote the day after the intoxication, Mrs. H—— and her husband disagree. Several weeks later, on February 13th, the patient, still believing in heroic doses, after taking three teaspoonfuls of the mixture noticed the same strong odor in the urine.

And now, gentlemen, I will conclude with a few remarks on the treatment of creosote poisoning. When first I saw my patient under the effect of the poisoning by creosote I thought external excitants the most effective, which they proved to be, as they brought her to consciousness in a short time. Whether this was accidental or not I dare not affirm. In the future should you meet with a case wherein these simple remedies

* Of Breyer & Schweitzer, analytical chemists, 159 Front street, New York city.

do not have the desired results, I would draw your attention to the following note: "The question as to whether the antidotes, consisting of the soluble sulphates, which are so efficacious in carbolic acid poisoning, would be equally effective in poisoning by creosote derived from beechwood has been studied by Hare † of Philadelphia. It will be remembered that these substances unite with carbolic acid, forming sulphocarbols, which are virtually innocuous. In these experiments it was found that animals receiving very large poisonous doses of creosote could invariably be saved if soluble sulphates in sufficient quantity were administered." ‡

To Mrs. H——'s history I will add that after the intoxication she again took the creosote, but was obliged to begin, as she was at all times after a pause, with small doses, increasing them so rapidly that she very soon reached 300 drops. At last the dose was increased to the extraordinary large amount of 500 drops twice daily; then pneumonia on the left side developed, but she is now convalescing.

Creosote is undoubtedly a strong poison, and must naturally have poisonous effects, either taken without graduation in a large quantity or as my patient did increased (although accustomed to a large dose) suddenly to a far larger one. On the other hand there are but few that one can become habituated to and which the organism can for so long a time bear as well as creosote.

When Beverly Robinson, supported by others, states that the patients in the United States cannot take creosote in large doses I disagree with him, and firmly believe that there are many in this country who can bear very large doses, and for these the more we administer the happier results we obtain.

1054 LEXINGTON AVENUE.

† University Medical Magazine, April, 1889.

‡ Annual of the University Medical Society, 1890.

